SPIN VALVE SENSOR HAVING AN ANTIPARALLEL (AP) SELF-PINNED LAYER STRUCTURE COMPRISING COBALT FOR HIGH MAGNETOSTRICTION

ABSTRACT OF THE DISCLOSURE

In one illustrative embodiment of the invention, a spin valve sensor of a magnetic head has a free layer structure; an antiparallel (AP) self-pinned layer structure; and a non-magnetic electrically conductive spacer layer in between the free layer structure and the AP self-pinned layer structure. The AP self-pinned layer structure includes a first AP pinned layer; a second AP pinned layer; an antiparallel coupling (APC) layer formed between the first and the second AP pinned layers. At least one of the first and the second AP pinned layers is made of cobalt having no iron content. The other AP pinned layer may be formed of cobalt, cobalt-iron, or other suitable material. The use of cobalt in the AP self-pinned layer structure increases its magnetostriction to increase the self-pinning effect. Preferably, the first AP pinned layer is cobalt-iron and the second AP pinned layer is cobalt which provides for both an increase in magnetostriction and magnetoresistive coefficient $\Delta r/R$ of the sensor.